Public Abstract

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In this work, we develop a license plate detection and recognition method using a SVM (Support Vector Machine) classifier with HOG (Histogram of Oriented Gradients) features. The system performs window searching at different scales and analyzes the HOG feature using a SVM and locates their bounding boxes using a Mean Shift method. A car head and rear detection method was also proposed to accelerate the time consuming scanning process. A comparison of the performance for different cell and block sizes of HOG feature is provided, and four rounds of bootstrapping was performed to achieve better detection performance. Our license plate detection results show that this method is relatively insensitive to variations in illumination, license plate patterns, camera perspective and background variations. We tested our method on the Caltech data set (1999), and achieved a detection rate of 96.0%. We also studied how its performance is impacted by different levels of noise and motion blur.

After license plate detection, we proceed to perform character segmentation and recognition using SVM classifiers with HOG features. In character segmentation, we need to deal with low contrast and tilted plates. The system performs window searching in different scales and analyzes the HOG feature using a SVM and locates their bounding boxes using Mean Shift.